Title Imazalil concentration for *in vitro* monitoring of imazalil resistant isolates of *Penicillium digitatum* in citrus packinghouses

Author E. Pérez , O. Blanco, C. Berreta, I. Dol and J. Lado

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Abstract

The extensive use of imazalil (IMZ) in Uruguayan citrus packinghouses to control *Penicillium* spp. favored the selection and proliferation of resistant isolates. With the aim of detecting *Penicillium digitatum* biotypes that are not controlled by commercial doses of IMZ, the IMZ concentration within amended potato dextrose agar (PDA) plates was adjusted to 1.0 mg L^{-1}IMZ. This concentration allowed the detection of resistant isolates that were not controlled by commercial applications of 3.0 g L^{-1}IMZ. These isolates were able to grow in fruit with IMZ residues of 0.92 and 3.08 mg kg^{-1}. Therefore, environmental monitoring of facilities where commercial dip applications containing 3.0 g L^{-1}IMZ are employed, should be done with 1.0 mg L^{-1} of IMZ in Petri dishes. We can conclude that use of IMZ in postharvest applications of 3.0 g L^{-1} remains effective to control wild Uruguayan *P. digitatum* isolates but not for resistant ones. A survey of 26 *P. digitatum* isolates collected in Uruguay indicated IMZ resistant isolates occurred in packinghouses and not in citrus groves.